

PATENT  
ATTY. DOCKET NO. IBM/96  
Confirmation No. 7560

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Cary Lee Bates et al. Art Unit: 2172  
Serial No. : 09/356,241 Examiner: Cam-Y Truong  
Filed : July 16, 1999  
For : ORDERING OF DATABASE SEARCH RESULTS BASED ON USER FEEDBACK

Cincinnati, Ohio 45202

February 12, 2002

Assistant Commissioner for Patents  
**ATTENTION: Board of Patent Appeals and Interferences**  
Washington, D.C. 20231

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**TRANSMITTAL OF APPEAL BRIEF (PATENT APPLICATION-37CFR 191)**

1. Transmitted herewith in triplicate is the APPEAL BRIEF in this application with respect to the Notice of Appeal received by the Office on January 18, 2002.
  2. **STATUS OF APPLICANT**

This application is on behalf of

**XX other than a small entity**

small entity

### Verified Statement:

attached

already filed

### **3. FEE FOR FILING APPEAL BRIEF**

Pursuant to 37 CFR 1.17(f) the fee for filing the Appeal Brief is:

Small entity \$160.00

XX Other than a small entity \$320.00

XX Other than a small entity \$320.00

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#### 4. EXTENSION OF TIME

Applicant petitions for an extension of time under 37 C.F.R. 1.136(a) for the total number of months checked below:

<u>Months</u>	<u>Fee for other than small entity</u>	<u>Fee for small entity</u>
_____ one month	\$ ..... 110.00	\$ ..... 55.00
_____ two months	..... 400.00	..... 200.00
_____ three months	..... 920.00	..... 460.00
_____ four months	..... 1,440.00	..... 720.00
_____ five months	..... 1,960.00	..... 980.00

Fee: \$ \_\_\_\_\_

If an additional extension of time is required, please consider this a petition therefor.

#### 5. TOTAL FEE DUE

The total fee due is:

Appeal Brief Fee \$320.00

Extension Fee \_\_\_\_\_

#### 6. FEE PAYMENT

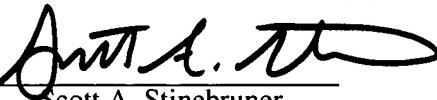
XX Attached is a check in the sum of \$320.00.

\_\_\_\_\_ Charge fee to Deposit Account No. 23-3000.

#### 7. FEE DEFICIENCY

XX Charge any additional extension fee required or credit any overpayment to Deposit Account No. 23-3000.

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#### CERTIFICATE OF MAILING 37 CFR 1.8

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Assistant Commissioner for Patents, Attention: Board of Patent Appeals and Interferences, Washington, D.C. 20231 on February 12, 2002.

  
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Attorney Docket No. IBM/96  
Confirmation No. 7560

PATENT

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* Cary Lee Bates, Paul Reuben Day, John Matthew Santosuosso

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Appeal No. \_\_\_\_\_  
Application No. 09/356,241

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APPEAL BRIEF

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7560-241  
Board of Patent Appeals  
and Interferences

## IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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**APPEAL BRIEF**

**I. REAL PARTY IN INTEREST**

This application is assigned to International Business Machines Corporation, of Armonk, New York.

**II. RELATED APPEALS AND INTERFERENCES**

There are no related appeals or interferences.

**III. STATUS OF CLAIMS**

Claims 1-27, 38, and 48-66 are pending in the Application, with claims 28-37 and 39-47 being canceled in the Preliminary Amendment filed on July 16, 1999 concurrently with the application. Claims corresponding to the canceled claims were added as claims 48-66 in the Amendment and Response filed on July 9, 2001. All pending claims stand rejected, and are now on appeal.

**IV. STATUS OF AMENDMENTS**

There have been no amendments filed subsequent to final rejection (Paper 6).

## V. SUMMARY OF INVENTION

The claims at issue are generally directed to a number of improvements in the area of database searching, and in particular, in search engines used to retrieve search results (referred to as "result sets") from one or more databases. Some search engines may find utility, for example, in assisting users with locating relevant information from the Internet. For instance, Yahoo, Google, AltaVista, Hotbot, and Excite are examples of well known search engines.

In the context of Internet searching, search engines are typically used to identify Internet-accessible documents that match a certain search criterion, e.g., one or more keywords input by a user. However, given that words can have different meanings in different contexts, and that the volume of information accessible via the Internet is enormous and growing larger every day, often a search engine will identify a large number of potentially relevant documents in response to a search. When a large number of documents are identified, the manner in which those documents are presented to a user becomes as, if not more, important than the process of finding those documents in the first place.

The ultimate goal of a search engine is to present a user with requested information in such a manner that as little additional effort as possible is required on the part of the user. As such, it is typically desirable for a search engine to "rank" search results in such a manner that the potentially most relevant documents will be presented to a user first, e.g., in a list where each successive document in the list is somewhat less relevant than every document listed above that document in the list. The fewer documents a user is required to look at to find requested information, the less burden is placed on the user.

Early search engines typically relied on generally rudimentary retrieval algorithms that ranked the results of queries based upon factors such as the number of search terms that were found in each document, the number of occurrences of each search term in each document, the proximity of search terms in each document, and/or the location of search terms in each document (e.g., giving greater weight to search terms being at the top, or in a title or heading, or a document). (Application, page 2).

Later search engines incorporated other factors into result rankings. For example, some search engines rank documents that are listed in various Internet directories over other documents

that are not. Still other search engines use "link popularity", where documents are ranked in part based upon the number of links to those documents by other documents. The theory in this latter instance is that a document that is referenced by a large number of other documents will typically contain more useful information (Application, page 2).

Yet another factor that may be used in ranking search results is based upon user interaction with documents. For example, it is possible with some search engines to monitor the amount of time that a user spends viewing particular documents identified in a set of search results and increase the ranks of documents that have been viewed for longer times, based upon the premise that a user will spend more time viewing a more relevant document than viewing a less relevant document. (Application, page 3). However, it has been found that the duration that a user spends viewing a document can also be dependent upon factors other than relevancy, e.g., if a document is large and the user has to spend a relatively long amount of time to determine that the document is not relevant. As a consequence, it has been found that the duration that a user spends viewing a document may have only marginal applicability to the relevance of a document in certain instances. (Application, page 3).

Many of Applicants' claims discussed below are directed to enhancements in terms of utilizing user feedback in ranking search results. In particular, a "user feedback parameter" is associated with records in a database, and is used to order records that have been placed in a result set generated in response to a search request. (Application, page 4).

As a component of utilizing user feedback parameters in ranking search results, two principal operations are typically required. The first such operation is that of generating search results in response to user requests. It is during the generation of search results that user feedback parameters are typically used to rank results. (Application, page 13). Moreover, as discussed in greater detail at pages 12-13, typically user feedback parameters will be used in connection with other factors to rank search results. For example, keyword-based relevance may be used as a primary sort key, with user feedback parameters used as secondary sort keys to rank records having the same or similar keyword-based relevance.

The second operation is that of tracking user interaction with records after a result set has been generated, so that user feedback data can be associated with particular records for use in ordering future generated result sets. (Application, page 13).

One user interaction that Applicants have identified as having a potential effect on the perceived relevance of a record is that of *multiple* accesses to a record by a user, the theory being that a single access to a record listed in a result set is not nearly as indicative of the relevance of a record as multiple accesses to that same record. (Application, page 4). It is likely in many instances that, when presented with a list of search results, a user may quickly look over numerous records to identify potentially relevant information. However, only later will the user return to particular records that have been identified as being more relevant than the other records in the result set. Thus, detecting multiple accesses to a particular record has somewhat of the effect of filtering out a user's first pass through a set of search results. Furthermore, it is believed that the more times a user revisits a particular record, the more likely that the record contains useful information, as a user would be less likely to revisit a worthless record.

As an example, a user might be presented with records A, B, C and D, and might quickly access each record to ascertain its potential relevancy. Assuming that the user found that record B was the most likely source of useful information, that user might be inclined to revisit record B and read the record in more detail. The fact that record B was accessed multiple times thus indicates a higher potential relevancy for record B than the other records in the result set.

Another user interaction that Applicants have identified as having a potential effect on the perceived relevance of a record is that of a record being the last, or most recently, accessed record from a result set, the theory being that a user will typically halt looking through search results once the desired information is found. (Application, page 4).

As an example, a user might be presented with the same records A, B, C and D, and might view records A and B, and notice that the information he or she was seeking is not present in those records. Then, if the user viewed record C, and found the desired information, that user would likely not go on to view record D, or revisit either of records A or B. The fact that record C was the most recently accessed record from the result set thus indicates a higher potential relevancy for record C than the other records in the result set.

Another user interaction that Applicants have identified as having a potential effect on the perceived relevance of a record is based upon the *context* within which a user accesses particular records. (Application, page 4). This is premised upon the belief that certain records may be accessed for different reasons, some of which may or may not be relevant when a record is being ranked in a result set based upon a particular search request. To address contextual relevancy of a record, Applicants have proposed to associate, with a user feedback parameter for a record, a plurality of weights, each of which associated with a particular keyword. Then, when the relevancy of a record is being analyzed during ranking of a record in a result set, only those weights that are associated with keywords that match the search request from which the result set is generated are used in the analysis. A detailed example of an embodiment that implements such context-based weighting is described in the Application at pages 23-25, and shown in Figs. 13-15.

An additional feature that is recited in the claims is that of grouping results into relevance groups, and utilizing user feedback parameters to sort the results in each of the relevance groups. As described, for example, at page 13 of the Application, a relevance group may be defined to include records from a result set that have an identical relevancy, or a relevancy within a predetermined range. User feedback information in this circumstance is used as a secondary ordering parameter to sort the records within the individual groups.

Still another feature recited in the claims is the use of script-based notification to generate the user feedback information ultimately used in the ranking of later search results. As described at pages 16, 18 and 19 of the Application, and shown in Fig. 8 and Table I, it may be desirable to embed executable scripts in a result document returned to a user. As is well known in the art, it is often commonplace to return search results in Internet searches in the form of result pages where the results are listed with embedded hypertext links that a user can select to view the specific results. Applicants have proposed, however, to utilize embedded scripts in lieu of such hypertext links to provide, in addition to the function of navigating the identified record, the additional function of sending a notification to a search engine that a user is selecting that particular record.

One benefit of this configuration is that, in many instances, a conventional Internet browser may be used by a user to access search results, and to provide feedback to a search engine, without any specific modifications or customized software installed by the user. Moreover, the act of notifying the search engine is more or less "invisible" to the user, as the user is often able to access a record using the same input from that user's perspective.

A further feature recited in the claims is that of using a search request data structure to store previously-generated result sets. In particular, a search request data structure is utilized to store a plurality of search request records, with each including a search request identifier that identifies a unique combination of keywords, and a result set identifier that identifies a subset of a plurality of records in a database that match the unique combination of keywords. The search request data structure is accessed in response to a search request to locate a search request record including a search request identifier that matches the keywords provided in the search request. A result set is then generated that identifies the subset of records identified in the result set identifier in the located search request record. (Application, page 4).

Among other advantages, the use of a search request data structure permits optimal result sets to be associated with particular search requests, such that future instances of the same search requests can return the same result sets in lieu of attempting to construct new result sets from scratch. (Application, page 4). A more detailed discussion of one exemplary embodiment that implements such a search request data structure is found at pages 25-28 of the Application, and shown in Figs. 16-19.

## VI. ISSUES

- A. Whether claims 1-3, 6-16, 19-27, 49-59, and 66 were improperly rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 5,855,015 to Shoham (hereinafter, "*Shoham*").
- B. Whether claims 64-65 were improperly rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,088,707 to Bates et al. (hereinafter, "*Bates*").

- C. Whether claims 4-5, 17-18, and 48 were improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over *Shoham* in view of "*Content-Based, Collaborative Recommendation*", Marko Balabanovic and Yoav Shoham, Proceeding of the ACM March 1997, Communications of the ACM, Vol. 40, No. 3 (hereinafter, "*Balabanovic*").
- D. Whether claim 60 was improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over *Shoham* in view of *Bates*.
- E. Whether claims 61-63 were improperly rejected under 35 U.S.C. § 103(a) unpatentable over *Shoham* in view of *Bates* and further in view of U.S. Patent No. 5,864,679 to Kanai et al. (hereinafter, "*Kanai*").

## VII. GROUPING OF CLAIMS

For the purposes of appeal, the following groupings of claims are considered to be separately patentable, with the individual claims within each claim grouping standing or falling together:

- Group A(1): claims 1-2, 8-9 and 11-13
- Group A(2): claims 14-15, 21-22 and 24-26
- Group A(3): claims 27 and 53-57
- Group A(4): claims 38 and 58-59
- Group A(5): claims 3 and 16
- Group A(6): claim 6
- Group A(7): claim 19
- Group A(8): claim 49
- Group A(9): claim 50
- Group A(10): claim 51
- Group A(11): claim 7
- Group A(12): claim 20

Group A(13): claim 52  
Group A(14): claim 10  
Group A(15): claim 23  
Group A(16): claim 66  
Group B: claims 64-65  
Group C(1): claims 4-5  
Group C(2): claims 17-18  
Group C(3): claim 48  
Group D: claim 60  
Group E: claims 61-63

### VIII. ARGUMENT

Applicants respectfully submit that the Examiner's rejections of claims 1-27, 38, and 48-66 are not supported on the record, and the rejections should be reversed. The reasons for reversing the Examiner's rejections are presented in greater detail below.

A. **The Group A(1)-A(16) Claims (claims 1-3, 6-16, 19-27, 49-59, and 66) were improperly rejected under 35 U.S.C. § 102(e) as being anticipated by Shoham.**

The Examiner argues that *Shoham* anticipates all of claims 1-3, 6-16, 19-27, 49-59 and 66. Anticipation of a claim under 35 U.S.C. §102, however, requires that "each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros., Inc. v. Union Oil Co.*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), *quoted in In re Robertson*, 49 USPQ2d 1949, 1950 (Fed. Cir. 1999). Absent express description, anticipation under inherency requires extrinsic evidence that makes it clear that "the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Co. v. Monsanto Co.*, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991), *quoted in In re Robertson* at 1951. "Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain

thing may result from a given set of circumstances is not sufficient." Continental Can at 1749, quoted in In re Robertson at 1951.

Applicants respectfully submit that *Shoham* falls far short of anticipating claims 1-3, 6-16, 19-27, 49-59 and 66, and as such, the rejections thereof should be reversed. Specific discussions of the novelty of each of the aforementioned groups of claims rejected on the basis of anticipation are presented hereinafter.

1. The Group A(1) Claims (claims 1-2, 8-9 and 11-13) were improperly rejected under 35 U.S.C. §102(e) as being anticipated by *Shoham*.

Claim 1, which is representative of the Group A(1) claims, recites a method of accessing a database. The method includes:

- in response to a search request, generating a result set including identifications of a subset of a plurality of records in a database that match the search request;
- ordering the identifications of the records in the result set using a user feedback parameter associated with each record in the result set; and
- for each of the plurality of records, selectively updating the user feedback parameter associated therewith in response to detecting multiple accesses thereto by a user. (emphasis added).

As discussed above in Section V, Applicants have discovered that in many cases, a user's selection and viewing of a record multiple times will indicate a higher degree of relevancy within the context of a result set.

*Shoham*, the reference relied upon by the Examiner in rejecting claim 1, is generally directed to the use of heuristics to find potentially interesting information for users. User feedback is then used to modify the heuristics, i.e., to modify the types of information that will be searched and/or presented to a user (col. 7, lines 32-35). The user feedback, however, is provided in the form of "a rating, score, or binary parameter, such as yes/no, good/bad, or the like." (col. 7, lines 28-32). For example, *Shoham* presents an actual implementation where user feedback is implemented through the receipt of "evaluation" values of between +5 and -5, which were actively provided by a user after viewing pages. (col. 12, lines 28-36).

*Shoham* also discloses that user feedback may be passive, which is defined in *Shoham* to be "acquired by monitoring the response of the user during presentation of the selected information resources." (col. 7, lines 2-4). *Shoham* goes on to provide one specific example:

"For example, the length of time which elapses while viewing a particular information resource is somewhat indicative of how interesting that information resource is to the user, with longer elapsed times corresponding to more interesting information resources." (col. 7, lines 4-8).

It is important to note, however, that *Shoham* does not discuss any alternative examples of logic capable of monitoring user feedback during the presentation of information to a user, and certainly does not disclose any logic capable of specifically detecting multiple accesses to a record or information resource. More importantly, *Shoham* does not discuss updating a user feedback parameter in response to detecting multiple accesses to a record by a user. Accordingly, claim 1 is novel over *Shoham*, and the Examiner's rejection on this basis should be reversed.

In the final Office Action, the Examiner attempts to rebut Applicants' arguments, arguing on page 2 that col. 10, lines 45-60 of *Shoham* discloses tracking of visited nodes and using an optional time stamp so nodes can be selectively revisited in the future. However, the Examiner's arguments in this respect are irrelevant, as the "revisiting" refers to actions by the system in attempting to find useful items during an "exploration process", and not to the actions of a user when accessing records. Thus, the time stamps disclosed in *Shoham* are used to control when the system will revisit certain nodes to determine if any new items have been added that may be "interesting" based upon the heuristics encoded in the system logic. Given that claim 1 recites "detecting multiple accesses to a record by a user," the Examiner's reliance on this passage in *Shoham* is therefore in error.

Furthermore, claim 1 recites that a user feedback parameter is updated in response to the detection of multiple accesses. *Shoham* does not disclose updating any relevancy information "in response to" detecting multiple accesses to a record, and the Examiner does not even attempt to

argue this point. Instead, the Examiner has apparently chosen to read this limitation out of the claim, which is also in error.

Applicants also respectfully submit that claim 1 is non-obvious over *Shoham*, as there is no suggestion in the reference for tracking the number of accesses to a particular record by a user, or of using the number of accesses in controlling the perceived relevancy of a record. In fact, *Shoham* teaches expressly away from Applicants' claimed invention. Specifically, at col. 12, lines 19-27, *Shoham* discloses the presentation of pages matching a particular search heuristic to a user, and then obtaining user feedback relating to those pages. *Shoham* attempts to ensure a better mixture of pages to analyze by selecting at most one page from each site to present to a user (col. 12, lines 22-25). More importantly, however, *Shoham* also attempts to ensure a better mixture by eliminating the presentation of a page to a user a second time (col. 12, lines 25-27, "A second check performed prevented the user from seeing the same page twice."). In the *Shoham* scheme, a user is often not even permitted to view a page a second time.

Applicants therefore respectfully submit that claim 1 is non-obvious over *Shoham* and the other prior art of record. Reversal of the Examiner's rejection of claim 1 and the other Group A(1) claims (claims 2, 8-9 and 11-13), as well as allowance of these claims, are therefore respectfully requested.

2. The Group A(2) Claims (claims 14-15, 21-22 and 24-26) were improperly rejected under 35 U.S.C. §102(e) as being anticipated by *Shoham*.

Claim 14, which is representative of the Group A(2) claims, recites a method of accessing a database that includes generating a result set and ordering the identifications of records in the result set using a user feedback parameter, similar to claim 1. However, rather than updating a user feedback parameter in response to the detection of multiple accesses to a record by a user (as in claim 1), claim 14 recites updating a user feedback parameter for a record in response to "detecting that the record is the most recently accessed record in the result set."

As discussed above in Section V, Applicants have discovered that, in many cases, a record from a result set that is accessed last (i.e., most recently) will often be more relevant than

other records in a result set due to the fact that a good chance exists that a user found the information he or she was looking for when the user accessed that record.

As discussed above in connection with the Group A(1) claims, *Shoham* discloses predominantly an active user feedback system, where a user is required to "rate" each document he or she views. Actively rating a document, however, is not analogous to updating a user feedback parameter in response to detecting the access order of a record. Also, as discussed above, *Shoham* discloses an alternate passive feedback system; however, that system relies on the amount of time a user spends viewing a document, and there is no disclosure that access order is taken into account by the *Shoham* system.

In rejecting claim 14, it is interesting to note that the Examiner groups the discussion of claim 14 with that of claim 1. No separate application of *Shoham* to the specific language of claim 14 is provided by the Examiner. This, in and of itself, is reversible error.

The Examiner does attempt to rebut Applicants' arguments by citing col. 10, lines 45-60 of *Shoham* (Final Office Action, page 2). However, this rebuttal is nearly identical to the arguments presented with respect to claim 1. Specifically, the Examiner is attempting to utilize the presence of "time stamps" in *Shoham* to read on claim 14. The time stamps in *Shoham*, however, are used merely to determine when a system revisits certain nodes during an exploration process. As such, these time stamps are irrelevant as they are not used to update a user feedback parameter for a record in response to detecting that the record is the most recently accessed record in the result set.<sup>1</sup>

Applicants therefore respectfully submit that claim 14 is novel over *Shoham*, and the Examiner's rejection should be reversed. Moreover, as there is no suggestion in *Shoham*, or any other cited reference, of using the access order of records in a result set to affect a user feedback parameter, claim 14 is also non-obvious over the prior art of record. Reversal of the Examiner's

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<sup>1</sup>It should also be noted that the Examiner addresses the issue of detecting whether a record was the most recently accessed record in a result set in connection with claim 3 (Final Office Action, page 4). Again, however, the Examiner is relying on system exploration, and ignoring the specific claim limitation that a user feedback parameter is updated in response to detection of a record being a most recently accessed record in a result set. The Examiner's arguments with respect to claim 3 therefore add nothing to the instant rejection.

rejection of claim 14 and the other Group A(2) claims (claims 15, 21-22 and 24-26), as well as allowance of these claims, are therefore respectfully requested.

3. The Group A(3) Claims (claims 27 and 53-57) were improperly rejected under 35 U.S.C. §102(e) as being anticipated by Shoham.

Claim 27, which is representative of the Group A(3) claims, recites a method of accessing a database, which includes *inter alia* ordering the identifications of the records in a result set using a user feedback parameter associated with each record in the result set, where each user feedback parameter includes a plurality of weights, where each weight is associated with a keyword, and where the ordering of identifications uses only those weights associated with keywords that match the search request. Claim 27 also recites selectively updating at least one weight for the user feedback parameter associated with a record in response to user interaction with that record.

The Examiner's rejection of this claim, however, is deficient on its face. First, the Examiner rejects claim 27 on the basis that "Shoham teaches the same claimed limitations as claims 1 and 2." (Final Office Action, page 8). Given that claim 27 omits many of the limitations of claims 1 and 2, and adds other limitations that are not recited in either claim, the Examiner's basis for rejection is therefore irrelevant.

Second, and perhaps more disturbing, is the Examiner's statement, at page 9 of the Final Office Action, that, with respect to claims 4, 17 and 48:

"Shoham does not teach the claimed limitation 'ordering the records in the result set using the user feedback parameter associated with each record in the result set includes ordering the records using any weight associated with a keyword matching the search request.'"

Applicants respectfully submit that the above statement is an admission by the Examiner that the subject matter of claim 27 is novel over *Shoham*. Reversal of the Examiner's rejection of claim 27, and of the other Group A(3) claims, and allowance of these claims, are therefore respectfully requested.

Moreover, Applicants respectfully submit that irrespective of this admission, *Shoham* does not disclose or suggest claim 27. Applicants' claimed steps of ordering a result set based upon weights associated with keywords that match a search request, and of selectively updating a weight for a user feedback parameter for a record in response to user interaction with a record, are not addressed by *Shoham*. *Shoham* does disclose creating vector representations of documents based upon keywords & weights (col. 11, lines 17-20); however, the "weights" for a document are based upon a TFIDF scheme that is based upon the frequency and positioning of keywords in the document, and not on user feedback. (col. 11, line 52 to col. 12, line 3). Instead, user feedback is used to update different weights for a system model for a user, designated by the vector  $\vec{M}$  (col. 12, lines 28-36). As such, *Shoham* cannot be read to disclose either that a result set is ordered based upon weights associated with keywords matching a search request, or that a particular weight for a document is updated based upon user interaction with a record.

Accordingly, claim 27 is patentable over *Shoham*, and the rejection of the claim based upon *Shoham* should be reversed.

Furthermore, should the Examiner choose to apply the combination of *Shoham* and *Balabanovic* against the Group A(3) claims (as has been done against the Group C(1)-C(3) claims), Applicants respectfully submit that the Group A(3) claims are patentable over *Shoham* and *Balabanovic* for the same reasons as presented below in Section VIII.C.

4. The Group A(4) Claims (claims 38 and 58-59) were improperly rejected under 35 U.S.C. §102(e) as being anticipated by Shoham.

Claim 38, which is representative of the Group A(4) claims, recites a method of processing search requests submitted to a search engine. The method includes, *inter alia*, accessing a search request data structure in response to a search request that specifies a plurality of keywords, where the search request data structure includes a plurality of search request records, each of which including a search request identifier that identifies a unique combination of keywords, and a result set identifier that identifies a subset of a plurality of records in a database that match the unique combination of keywords. The search request data structure is accessed to locate a search request record including a search request identifier that matches the

plurality of keywords in the search request. From this located search request record, a result set may be generated from the subset of records identified in the result set identifier for the located search request record.

In rejecting claim 38, the Examiner refers to the rejections of claims 1 and 6. (Final Office Action, page 8). Claim 1 has been discussed above, so the Examiner's rejection of claim 6 will be addressed. Specifically, the Examiner cites Fig. 1, col. 5, lines 62-67 and col. 6, lines 13-20 of *Shoham*. Fig. 1, however, discloses nothing more than a computer network, with hypertext documents and the links therebetween shown stored in one or more computers on the network. Also, the cited passages of *Shoham* are reproduced below for the Board's convenience:

"With continuing reference to FIG. 1, each computer on the network may contain information resources, indicated generally by reference numeral 30, having hyperlinks, indicated generally by reference numeral 32, to other information resources. Information resources represent various types of multimedia information, such as text 34, graphics 36, . . ." (*Shoham*, col. 5, lines 62-67).

"In one embodiment of the present invention, information resources are authored utilizing the HyperText Markup Language (HTML) and the hyperlinks are defined utilizing Uniform Resource Locators (URL's). Also in this embodiment, the HyperText Transfer Protocol (HTTP) is utilized to explore and retrieve the associated information resource specified by the URL as explained in greater detail below." (*Shoham*, col. 6, lines 13-20).

Precisely how the Examiner considers the above passages to apply to the specific limitations of claim 6, or for that matter, claim 38, is unclear.

As described in Section V above, one aspect of Applicants' invention, which is embodied in claim 38, is that of storing result sets for particular search requests, which often eliminates the need to generate a result set from scratch in response to a new search request that is similar to one that has previously been performed. To support this functionality, a search request data structure stores a plurality of search request records, each of which including a search request identifier that identifies a unique combination of keywords, and a result set identifier that identifies a subset of a plurality of records in a database that match the unique combination of keywords. When a search request is received that matches the search request identifier for a

particular search request record, the subset of records that is associated with that search request identifier may be used to generate the result set.

The above passages that have been relied upon by the Examiner are completely irrelevant to these claimed concepts. Moreover, Applicants can find no disclosure or suggestion in *Shoham* of anything even arguably relevant to the invention recited in claim 38.<sup>2</sup> Accordingly, Applicants respectfully submit that claim 38 is novel and non-obvious over the prior art of record. Reversal of the Examiner's rejection of claim 38 and of the other Group A(4) claims (claims 58-59), and allowance of these claims, are respectfully requested.

5. The Group A(5) Claims (claims 3 and 16) were improperly rejected under 35 U.S.C. §102(e) as being anticipated by *Shoham*.

Claim 3, which is representative of the Group A(5) claims, recites, in addition to the features described above in connection with the Group A(1) claims, the concept of increasing the weight for a user feedback parameter based upon a record being the most recently accessed, similar to the Group A(2) claims. As such, claim 3 is patentable for the reasons set forth in both Sections VIII.A.1 and VIII.A.2 above. Reversal of the Examiner's rejection of claim 3, and of the other Group A(5) claim (claim 16), and allowance of these claims, are therefore respectfully requested.

6. The Group A(6) Claim (claim 6) was improperly rejected under 35 U.S.C. §102(e) as being anticipated by *Shoham*.

Claim 6 recites, in addition to the features described above in connection with the Group A(1) claims, the concept of accessing a search request data structure including records having both search request and result set parameters, similar to the Group A(4) claims. As such, claim 6

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<sup>2</sup>Applicants also wish to point out that claim 38 is similar in many respects to claims 64 and 65, which were rejected, not on the basis of *Shoham*, but instead on the basis of *Bates*. While it is unclear why the Examiner has chosen to reject these claims on the bases of different references, Applicants refer the Board to Section VIII.B. for a more detailed discussion of the applicability of *Bates* to the concepts recited in claim 38.

is patentable for the reasons set forth in both Sections VIII.A.1 and VIII.A.4 above. Reversal of the Examiner's rejection of claim 6, and allowance of this claim, are therefore respectfully requested.

7. The Group A(7) Claim (claim 19) was improperly rejected under 35 U.S.C. §102(e) as being anticipated by Shoham.

Claim 19 recites, in addition to the features described above in connection with the Group A(2) claims, the concept of accessing a search request data structure including records having both search request and result set parameters, similar to the Group A(4) claims. As such, claim 19 is patentable for the reasons set forth in both Sections VIII.A.2 and VIII.A.4 above. Reversal of the Examiner's rejection of claim 19, and allowance of this claim, are therefore respectfully requested.

8. The Group A(8) Claim (claim 49) was improperly rejected under 35 U.S.C. §102(e) as being anticipated by Shoham.

Claim 49 recites, in addition to the features described above in connection with the Group A(3) claims, the concept of increasing the weight for a user feedback parameter in response to detecting multiple accesses by a user, similar to the Group A(1) claims. As such, claim 49 is patentable for the reasons set forth in both Sections VIII.A.1 and VIII.A.3 above. Reversal of the Examiner's rejection of claim 49, and allowance of this claim, are therefore respectfully requested.

9. The Group A(9) Claim (claim 50) was improperly rejected under 35 U.S.C. §102(e) as being anticipated by Shoham.

Claim 50 recites, in addition to the features described above in connection with the Group A(3) claims, the concept of increasing the weight for a user feedback parameter based upon a record being the most recently accessed, similar to the Group A(2) claims. As such, claim 50 is patentable for the reasons set forth in both Sections VIII.A.2 and VIII.A.3 above. Reversal of the

Examiner's rejection of claim 50, and allowance of this claim, are therefore respectfully requested.

10. The Group A(10) Claim (claim 51) was improperly rejected under 35 U.S.C. §102(e) as being anticipated by Shoham.

Claim 51 recites, in addition to the features described above in connection with the Group A(3) claims, the concept of accessing a search request data structure including records having both search request and result set parameters, similar to the Group A(4) claims. As such, claim 51 is patentable for the reasons set forth in both Sections VIII.A.3 and VIII.A.4 above. Reversal of the Examiner's rejection of claim 51, and allowance of this claim, are therefore respectfully requested.

11. The Group A(11) Claim (claim 7), the Group A(12) Claim (claim 20), and the Group A(13) Claim (claim 52), were all improperly rejected under 35 U.S.C. §102(e) as being anticipated by Shoham.

Each of claims 7, 20 and 52 adds to its respective independent claim, the concept of partitioning a result set into a plurality of relevance groups, and sorting the relevance groups using the weights from user feedback parameters. These claims are presented in different claim groupings, however, based upon the separate independent claims from which these claims depend (the patentability of which is discussed above in Sections VIII.A.1-3).

In rejecting these claims, the Examiner relies on Fig. 4, as well as col. 8, lines 14-20 and 25-31, of *Shoham*. The relevant text is reproduced below for the Board's convenience:

"The output of the initialization process would be a function that takes any Web information resource and returns a ranking within the range of zero to ten. The exploration and presentation heuristics are then based on these ranking functions. Preferably, the heuristics developed based on the training examples continually adapt to the user's interests as determined by the user feedback, described below. . . The user may also enter a specific or general query at block 120, or select an information resource of interest to initialize the heuristics. Alternatively, a null query indicates that the system should simply start exploring and use subsequent presentation and relevance feedback to shape the heuristics and

determine which information resources to present to the user." (*Shoham*, col. 8, lines 14-20 and 25-31).

Applicants can find no relevancy whatsoever in this passage to "relevance groups" or any other specific features recited in claims 7, 20 and 52. Moreover, Applicants can find no teaching in the reference as to the use of "relevance groups" within the context of the invention.

Applicants therefore respectfully submit that claims 7, 20 and 52 are additionally patentable over *Shoham* based upon this additional feature. Reversal of the Examiner's rejections, and allowance of these claims, are therefore respectfully requested.

12. The Group A(14) Claim (claim 10) and the Group A(15) Claim (claim 23), were all improperly rejected under 35 U.S.C. §102(e) as being anticipated by *Shoham*.

Each of claims 10 and 23 adds to its respective independent claim, the concept of generating a script in a hypertext document that generates a notification configured to indicate that an associated record has been accessed by a user. These claims are presented in different claim groupings, however, based upon the separate independent claims from which these claims depend (the patentability of which is discussed above in Sections VIII.A.1-2).

As discussed in Section V above, by using embedded scripts in a hypertext document, a search engine may be notified of user feedback information simply by virtue of a user's selection of a link to a document in a result set. In many instances, such a configuration may enable a purely conventional browser to be used at the user end, thus eliminating the need for customized software in a user's computer. Moreover, often the use of embedded scripts enables user tracking to be performed without any conscious effort on the part of a user.

In rejecting claims 10 and 23, the Examiner relies on col. 10, lines 24-37 and col. 12, lines 19-67, of *Shoham*. These passages are too lengthy to reproduce in this paper; however, the Board will note that the passages are utterly silent about embedded scripts or even how user feedback information is collected. *Shoham* does disclose at col. 8, line 54 to col. 9, line 8, various manners of soliciting feedback to a user. Most feedback collection in *Shoham* is performed via "active feedback", where a user is required to enter some indication of the

relevance of presented information. There is no disclosure or suggestion in the reference, however, of the use of an embedded script to provide such feedback.

*Shoham* also discloses the use of "passive feedback", in particular the monitoring of how long a user views a particular information resource. Precisely how such feedback is collected, however, is not described. Thus, *Shoham* falls far short of clearly disclosing Applicants' claimed usage of embedded scripts to provide user feedback to a search engine.

Applicants therefore respectfully submit that claims 10 and 23 are additionally patentable over *Shoham* based upon this additional feature. Reversal of the Examiner's rejections, and allowance of these claims, are therefore respectfully requested.

13. The Group A(16) Claim (claim 66) was improperly rejected under 35 U.S.C. §102(e) as being anticipated by *Shoham*.

Claim 66 depends from claim 65, which was rejected under 35 U.S.C. §102(e) as being anticipated by *Bates*. Given that the independent claim from which claim 66 depends was not rejected based upon *Shoham*, Applicants respectfully submit that the rejection of claim 66 is deficient on its face. Reversal of the Examiner's rejection of claim 66 is therefore respectfully requested. It should also be noted that, by virtue of its dependency upon claim 65, claim 66 is also patentable over the prior art of record for the reasons presented below in Section VIII.B.

B. The Group B Claims (claims 64-65) were improperly rejected under 35 U.S.C. § 102(e) as being anticipated by *Bates*.

Claim 64, which is representative of the Group B claims, recites *inter alia* a search request data structure including a plurality of search request records, each of which including a search request identifier identifying a unique combination of keywords, and a result set identifier identifying a subset of a plurality of records in a database that match the unique combination of keywords. Claim 64 additionally recites a program configured to, in response to a search request that specifies a plurality of keywords, search the search request data structure to locate a search request record including a search request identifier that matches the plurality of keywords in the

search request, and to generate a result set identifying the subset of records identified in the result set identifier in the located search request record.

Claim 64 is not disclosed or suggested by *Bates*. *Bates* discloses a system that attempts to determine whether a hypertext document has been updated, and to indicate whether the hypertext document has been updated in association with a hypertext link to that hypertext document.

Apparently, the Examiner relies on a keyword-based update notification process disclosed in *Bates* to reject claim 64, relying on various passages at cols. 5-7 of the reference. However, the keyword-based update notification of *Bates* is used for an entirely different purpose (to determine whether a document has been updated), and the data structure utilized therefor (as shown in Fig. 5) is substantially different, from that recited in claim 64.

Specifically, as described first at col. 11, lines 33-64 (in connection with Fig. 11), and later more specifically at col. 15, line 36 to col. 16, line 13 (in connection with Figs. 16 and 17), *Bates* discloses storing in a data structure a URL for a document to be monitored, and a keyword expression (which may include a list of keywords) to be applied against the document to determine whether or not the document has been updated. As described in detail starting at col. 15, line 36, whenever it is desirable to determine whether a document being monitored has been updated in *Bates*, a current copy of the document at the URL specified in a record is retrieved, and a list of keywords is generated therefrom. A keyword expression supplied in the record is applied to the list of keywords, generating a TRUE/FALSE result. This result is compared to the result of the application of the keyword expression to a previous copy of the document (stored in a reference data field in the record), such that if the expression results are different, the document is deemed to have been updated.

While the data structure used in *Bates* (visited list 40) potentially includes a URL and a list of keywords, similar to that recited in claim 64, it is important to note that the way that data structure is used is substantially different from the claimed invention. Claim 64 recites searching a search request data structure in response to a search request that specifies a plurality of keywords, and for the purpose of locating a search request record that includes a search request identifier that matches the plurality of keywords. The result of finding the appropriate search

request record is to use the subset of records identified in the search request record to generate a result set for the search request.

*Bates*, in contrast, discloses applying a keyword expression to a document identified by a record, and determining an update status for that document therefrom, which is an entirely different process. Moreover, it appears the only search that would be performed with the visited list of *Bates* would be keyed off of the URL of a document to be tested, and would be used to retrieve the keyword expression stored in any record matching the URL being searched. Claim 64, however, recites precisely the opposite usage of its data structure, where the search is keyed off of the list of keywords corresponding to a search request, and a list of records (e.g., URL's) is generated as a result of the search request if any search request record matching the list of keywords is found.

Given this entirely different configuration of *Bates*, Applicants respectfully submit that claim 64 is novel and non-obvious over the reference. Reversal of the Examiner's rejection of claim 64 (and of claim 65), and allowance of these claims, are respectfully requested.

C. **The Group C(1)-C(3) Claims (claims 4-5, 17-18 and 48) were improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over *Shoham* in view of *Balabanovic*.**

Claims 4-5, 17-18, and 48 were rejected on the basis of 35 U.S.C. §103(a) as being obvious in view of *Shoham* and *Balabanovic*. A *prima facie* showing of obviousness, however, requires that the Examiner establish that the differences between a claimed invention and the prior art "are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art." 35 U.S.C. §103(a). Moreover, such a showing requires objective evidence of the suggestion, teaching or motivation to combine prior art references, as "[c]ombining prior art references without evidence of such a suggestion, teaching or motivation simply takes the inventor's disclosure as a blueprint for piecing together the prior art to defeat patentability -- the essence of hindsight." In re Dembiczak, 50 U.S.P.Q. 2d 1614, 1617 (Fed. Cir. 1999).

Applicants respectfully submit that *Shoham* and *Balabanovic* do not disclose or suggest, alone or in combination, the various features recited in claims 4-5, 17-18 and 48, and as such, the

rejections thereof should be reversed. Each of these claims depends ultimately from one of independent claims 1, 14 and 27 (the patentability of which is discussed above in Sections VIII.A.1-3), so these claims are patentable simply by virtue of their dependency on these independent claims.<sup>3</sup>

Moreover, each of these claims focuses at least in part on the concepts of ordering records in a result set using weights from a user feedback parameter in each record that are associated with particular keywords matching a search request. As discussed above in Section VIII.A.3., *Shoham* discloses creating vector representations of documents based upon keywords & weights (col. 11, lines 17-20); however, the "weights" for a document are based upon a TFIDF scheme that is based upon the frequency and positioning of keywords in the document, and not on user feedback. (col. 11, line 52 to col. 12, line 3). Furthermore, *Balabanovic*, at page 6, discusses weights for keywords; however, there is no discussion that these weights are applied to particular documents or records, or that these weights are based upon user feedback. Instead, it appears more likely that the keyword weights are associated with a collection agent that attempts to find documents that may be relevant for a user. However, this is a different configuration from that recited in the Group C(1)-C(3) claims, where particular records are associated with keywords and associated weights.

Accordingly, Applicants respectfully submit that the cited references do not disclose or suggest each and every limitation of the Group C(1)-C(3) claims. Reversal of the Examiner's rejections, and allowance of these claims, are therefore respectfully requested.

**D. The Group D Claim (claim 60) was improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Shoham in view of Bates.**

Claim 60 adds to the Group A(4) claims the concept of ordering a list of record identifiers identified by a result set identifier of a first search request record based upon user feedback. In rejecting the claim 60, the Examiner first admits that *Shoham* does not teach "a list of record

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<sup>3</sup>It should be noted that claims 4-5, 17-18 and 48 have been placed in different claim groupings based upon their dependency upon claims that are themselves classified in different claim groupings.

identifiers identified by the result set identifier of a first search request record based upon the copies of the user feedback parameters associated with the subset of records." The Examiner instead relies on *Bates*, col. 6, lines 30-55, col. 17, lines 20-27, and col. 18, lines 63-67, for allegedly teaching this feature.

It is important to note that none of these cited passages discusses ordering records based upon user feedback. It is as if the Examiner is piecing together separate abstract concepts from the cited references so as to build a rejection of the claim, but without providing any motivation whatsoever for doing so in the manner suggested by the Examiner. While Applicants will not reproduce the Examiner's arguments herein, the Board is respectfully urged to refer to the Examiner's arguments at page 10 of the Final Office Action, which do not even appear to address the particular limitations of claim 60.

Regardless of the Examiner's basis for rejecting claim 60, however, Applicants have addressed above in Sections VIII.A(4) and VIII.B the patentability of Applicants' claimed search request data structure over *Shoham* and *Bates*. Reversal of the Examiner's rejection of claim 60, and allowance of the claim, are therefore respectfully requested.

**E. The Group E Claims (claims 61-63) were improperly rejected under 35 U.S.C. § 103(a) as being unpatentable over Shoham in view of Bates and further in view of Kanai.**

Claims 61-63 depend ultimately from claim 38, the patentability of which has been discussed above in Section VIII.A(4). The relevancy of *Bates* to the features recited in claim 38 has been discussed in Section VIII.B. Moreover, *Kanai* deals with transaction processing in a multiprocessor computer system. Accordingly, claims 61-63 are patentable by virtue of their dependency upon claim 38.

Furthermore, claims 61-63 additionally recite additional details of the search request data structure, as well as various features such as sorting a table implementation of the data structure based upon frequency of access, and adding and removing entries from such a table based upon frequency of access. The Examiner admits that *Shoham* and *Bates* fail to disclose many of these features; however, the Examiner relies on *Kanai* for allegedly disclosing these features.

With all due respect, the Examiner's citation of *Kanai* in this context appears to be nothing more than hindsight-based reasoning. It appears the Examiner has done nothing more than performed a keyword search on a term such as "access frequency", and found a reference that sorts "correlation information" by frequency of access. The reference deals with handling transactions in a multiprocessor computer, and the correlation information is used to group together data that is likely to be accessed together. Precisely how this reference relates to handling search requests or accessing a search request data structure is unclear from the Examiner's reasoning. In any event, the Examiner is required to provide "objective evidence" of a motivation to combine the references as suggested by the Examiner. Applicants respectfully submit that the Examiner has not, and cannot, sustain the burden. Accordingly, Applicants respectfully submit that the rejections of claims 61-63 should be reversed, and that claims 61-63 should be allowed over the prior art of record.

#### IX. CONCLUSION

In conclusion, Applicants respectfully request that the Board reverse the Examiner's rejections of claims 1-27, 38, and 48-66, and that the Application be passed to issue. If there are any questions regarding the foregoing, please contact the undersigned at 513/241-2324. Moreover, if any other charges or credits are necessary to complete this communication, please apply them to Deposit Account 23-3000.

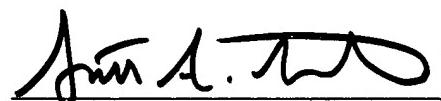
Respectfully submitted,

WOOD, HERRON & EVANS, L.L.P.

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**APPENDIX A: CLAIMS ON APPEAL (S/N 09/356,241)**

- 1        1. A method of accessing a database, the method comprising:
  - 2                (a) in response to a search request, generating a result set including identifications  
3                      of a subset of a plurality of records in a database that match the search request;
  - 4                (b) ordering the identifications of the records in the result set using a user  
5                      feedback parameter associated with each record in the result set; and
  - 6                (c) for each of the plurality of records, selectively updating the user feedback  
7                      parameter associated therewith in response to detecting multiple accesses thereto by a  
8                      user.
  
- 1        2. The method of claim 1, wherein selectively updating the user feedback parameter  
2           includes increasing a weight for the user feedback parameter associated with a first record in  
3           response to the number of times a user accesses the first record.
  
- 1        3. The method of claim 1, further comprising increasing a weight for the user feedback  
2           parameter associated with a first record in response to the first record being the most recently  
3           accessed record in the result set.
  
- 1        4. The method of claim 1, wherein the user feedback parameter associated with each  
2           record includes a plurality of weights, each weight associated with a keyword in the associated  
3           record, and wherein ordering the records in the result set using the user feedback parameter  
4           associated with each record in the result set includes ordering the records using any weight  
5           associated with a keyword matching the search request.
  
- 1        5. The method of claim 4, wherein selectively updating the user feedback parameter  
2           includes increasing a first weight for the user feedback parameter associated with a first record in  
3           response to receipt of a search request matching a first keyword associated with the first weight.

1       6. The method of claim 1, wherein generating the result set includes accessing a search  
2 request data structure that includes a plurality of search request records, each including a search  
3 request parameter identifying a unique combination of keywords, and a result set parameter  
4 identifying a subset of records in the database that match the unique combination of keywords.

1       7. The method of claim 1, wherein ordering the identifications of the records in the result  
2 set using the user feedback parameter associated with each record in the result set includes:

- 3             (a) partitioning the result set into a plurality of relevance groups, with each  
4 relevance group including identifications of records having like relevancies to the search  
5 request; and  
6             (b) sorting the identifications of records within each relevance group according to  
7 the user feedback parameters associated therewith.

1       8. The method of claim 1, wherein each record in the database includes a Uniform  
2 Resource Identifier (URL) that identifies a document stored on a computer network, wherein  
3 selectively updating the user feedback parameter includes selectively updating the user feedback  
4 parameter associated with a first record in the database in response to detecting multiple accesses  
5 to the document stored at the URL associated with the first record.

1       9. The method of claim 8, wherein generating the result set includes generating at least  
2 one hypertext document including a plurality of hypertext links, each of which configured to  
3 access a document identified by a record in the result set.

1       10. The method of claim 9, wherein generating the hypertext document includes  
2 generating a script associated with at least one of the records in the result set, the script  
3 configured to generate a notification that the associated record has been accessed by a user, and  
4 wherein detecting multiple accesses to the document stored at the URL associated with the first  
5 record includes receiving the notification.

1       11. An apparatus, comprising:

2                 (a) a memory within which is resident a plurality of records from a database, each  
3                          record associated with a user feedback parameter;

4                 (b) a first program, resident in the memory, the first program configured to, in  
5                          response to a search request, generate a result set including identifications of a subset of  
6                          the plurality of records that match the search request, and to order the identifications of  
7                          the records in the result set using the user feedback parameter associated with each record  
8                          in the result set; and

9                 (c) a second program, resident in the memory, the second program configured to,  
10                          for each of the plurality of records, selectively update the user feedback parameter  
11                          associated therewith in response to multiple accesses thereto by a user.

1       12. A program product, comprising:

2                 (a) a first program configured to, in response to a search request, generate a result  
3                          set including identifications of a subset of a plurality of records in a database that match  
4                          the search request, and to order the identifications of the records in the result set using a  
5                          user feedback parameter associated with each record in the result set;

6                 (b) a second program configured to, for each of the plurality of records,  
7                          selectively update the user feedback parameter associated therewith in response to  
8                          multiple accesses thereto by a user; and

9                 (c) a signal bearing medium bearing the first and second programs.

1       13. The program product of claim 12, wherein the signal bearing medium includes at  
2                  least one of a recordable medium and a transmission type medium.

1       14. A method of accessing a database, the method comprising:

2                 (a) in response to a search request, generating a result set including identifications  
3                          of a subset of a plurality of records in a database that match the search request;

4                 (b) ordering the identifications of the records in the result set using a user  
5                          feedback parameter associated with each record in the result set; and

6                             (c) for each of the plurality of records in the database, selectively updating the  
7                             user feedback parameter associated therewith in response to detecting that the record is  
8                             the most recently accessed record in the result set.

1                 15. The method of claim 14, wherein selectively updating the user feedback parameter  
2                     includes increasing a weight for the user feedback parameter associated with a first record in  
3                     response to the first record being the most recently accessed record in the result set.

1                 16. The method of claim 14, further comprising increasing a weight for the user feedback  
2                     parameter associated with a first record in response to the number of times a user accesses the  
3                     first record.

1                 17. The method of claim 14, wherein the user feedback parameter associated with each  
2                     record includes a plurality of weights, each weight associated with a keyword in the associated  
3                     record, and wherein ordering the records in the result set using the user feedback parameter  
4                     associated with each record in the result set includes ordering the records using any weight  
5                     associated with a keyword matching the search request.

1                 18. The method of claim 17, wherein selectively updating the user feedback parameter  
2                     includes increasing a first weight for the user feedback parameter associated with a first record in  
3                     response to receipt of a search request matching a first keyword associated with the first weight.

1                 19. The method of claim 14, wherein generating the result set includes accessing a search  
2                     request data structure that includes a plurality of search request records, each including a search  
3                     request parameter identifying a unique combination of keywords, and a result set parameter  
4                     identifying a subset of records in the database that match the unique combination of keywords.

1                 20. The method of claim 14, wherein ordering the identifications of the records in the  
2                     result set using the user feedback parameter associated with each record in the result set includes:

- 3                   (a) partitioning the result set into a plurality of relevance groups, with each  
4                   relevance group including identifications of records having like relevancies to the search  
5                   request; and  
6                   (b) sorting the identifications of records within each relevance group according to  
7                   the user feedback parameters associated therewith.

1                 21. The method of claim 14, wherein each record in the database includes a Uniform  
2                 Resource Identifier (URL) that identifies a document stored on a computer network, wherein  
3                 selectively updating the user feedback parameter includes selectively updating the user feedback  
4                 parameter associated with a first record in the database in response to detecting that the document  
5                 stored at the URL associated with the first record is the most recently accessed document  
6                 identified in the result set.

1                 22. The method of claim 21, wherein generating the result set includes generating at least  
2                 one hypertext document including a plurality of hypertext links, each of which configured to  
3                 access a document identified by a record in the result set.

1                 23. The method of claim 22, wherein generating the hypertext document includes  
2                 generating a script associated with at least one of the records in the result set, the script  
3                 configured to generate a notification of when the associated record was accessed by a user, and  
4                 wherein detecting that the document stored at the URL associated with the first record is the most  
5                 recently accessed document identified in the result set includes receiving the notification.

1                 24. An apparatus, comprising:

- 2                   (a) a memory within which is resident a plurality of records from a database, each  
3                   record associated with a user feedback parameter;  
4                   (b) a first program, resident in the memory, the first program configured to, in  
5                   response to a search request, generate a result set including identifications of a subset of  
6                   the plurality of records that match the search request, and to order the identifications of

7 the records in the result set using the user feedback parameter associated with each record  
8 in the result set; and

9 (c) a second program, resident in the memory, the second program configured to,  
10 for each of the plurality of records, selectively update the user feedback parameter  
11 associated therewith in response to detecting that the record is the most recently accessed  
12 record in the result set.

1 25. A program product, comprising:

2 (a) a first program configured to, in response to a search request, generate a result  
3 set including identifications of a subset of a plurality of records in a database that match  
4 the search request, and to order the identifications of the records in the result set using a  
5 user feedback parameter associated with each record in the result set;

6 (b) a second program configured to, for each of the plurality of records,  
7 selectively update the user feedback parameter associated therewith in response to  
8 detecting that the record is the most recently accessed record in the result set; and

9 (c) a signal bearing medium bearing the first and second programs.

1 26. The program product of claim 25, wherein the signal bearing medium includes at  
2 least one of a recordable medium and a transmission type medium.

1 27. A method of accessing a database, the method comprising:

2 (a) in response to a search request, generating a result set including identifications  
3 of a subset of a plurality of records in a database that match the search request;

4 (b) ordering the identifications of the records in the result set using a user  
5 feedback parameter associated with each record in the result set, each user feedback  
6 parameter including a plurality of weights, each weight associated with a keyword,  
7 wherein ordering the identifications of the records includes using only those weights  
8 associated with keywords that match the search request; and

28. - 37. (CANCELED)

1           38. A method of processing search requests submitted to a search engine, the method  
2 comprising:

- (a) receiving a search request that specifies a plurality of keywords;
  - (b) accessing a search request data structure in response to the search request, the request data structure including a plurality of search request records, each search request record including a search request identifier identifying a unique combination of keywords, and a result set identifier identifying a subset of a plurality of records in a database that match the unique combination of keywords, wherein accessing the search request data structure includes searching the search request data structure to locate a search request record including a search request identifier that matches the plurality of keywords in the search request; and
  - (c) generating a result set identifying the subset of records identified in the result set identifier in the located search request record.

39. - 47. (CANCELED)

1        48. (ADDED) The method of claim 27, wherein selectively updating at least one weight  
2        for the user feedback parameter includes, in response to user interaction with a first record,  
3        increasing any weight associated with the first record that is further associated with a keyword  
4        matching an active search request for the user.

1           49. (ADDED) The method of claim 27, wherein selectively updating at least one weight  
2       for the user feedback parameter includes increasing a first weight for the user feedback parameter  
3       associated with a first record in response to detecting multiple accesses thereto by a user.

1           50. (ADDED) The method of claim 27, wherein selectively updating at least one weight  
2       for the user feedback parameter includes increasing a first weight for the user feedback parameter  
3       associated with a first record in response to the first record being the most recently accessed  
4       record in the result set.

1           51. (ADDED) The method of claim 27, wherein generating the result set includes  
2       accessing a search request data structure that includes a plurality of search request records, each  
3       including a search request parameter identifying a unique combination of keywords, and a result  
4       set parameter identifying a subset of records in the database that match the unique combination  
5       of keywords.

1           52. (ADDED) The method of claim 27, wherein ordering the identifications of the records  
2       in the result set using the user feedback parameter associated with each record in the result set  
3       includes:

4                 (a) partitioning the result set into a plurality of relevance groups, with each  
5       relevance group including identifications of records having like relevancies to the search  
6       request; and

7                 (b) sorting the identifications of records within each relevance group using the  
8       weights from the user feedback parameters associated therewith.

1           53. (ADDED) The method of claim 27, wherein each record in the database includes a  
2       Uniform Resource Identifier (URL) that identifies a document stored on a computer network,  
3       wherein selectively updating the user feedback parameter includes selectively updating at least  
4       one weight for the user feedback parameter associated with a first record in the database in  
5       response to user interaction with the first record.

1           54. (ADDED) The method of claim 33, wherein generating the result set includes  
2 generating at least one hypertext document including a plurality of hypertext links, each of which  
3 configured to access a document identified by a record in the result set.

1           55. (ADDED) An apparatus, comprising:

2               (a) a memory within which is resident a plurality of records from a database, each  
3 record associated with a user feedback parameter;

4               (b) a first program, resident in the memory, the first program configured to, in  
5 response to a search request, generate a result set including identifications of a subset of  
6 the plurality of records that match the search request, and to order the identifications of  
7 the records in the result set using the user feedback parameter associated with each record  
8 in the result set, wherein each user feedback parameter includes a plurality of weights,  
9 wherein each weight is associated with a keyword, and wherein the first program is  
10 configured to order the identifications of the records by using only those weights  
11 associated with keywords that match the search request; and

12              (c) a second program, resident in the memory, the second program configured to,  
13 for each of the plurality of records, selectively update the user feedback parameter  
14 associated therewith in response to user interaction with the record.

1           56. (ADDED) A program product, comprising:

2               (a) a first program configured to, in response to a search request, generate a result  
3 set including identifications of a subset of a plurality of records in a database that match  
4 the search request, and to order the identifications of the records in the result set using a  
5 user feedback parameter associated with each record in the result set, wherein each user  
6 feedback parameter includes a plurality of weights, wherein each weight is associated  
7 with a keyword, and wherein the first program is configured to order the identifications of  
8 the records by using only those weights associated with keywords that match the search  
9 request;

- (b) a second program configured to, for each of the plurality of records, selectively update the user feedback parameter associated therewith in response to user interaction with the record; and
- (c) a signal bearing medium bearing the first and second programs.

57. (ADDED) The program product of claim 56, wherein the signal bearing medium includes at least one of a recordable medium and a transmission type medium.

58. (ADDED) The method of claim 38, further comprising:

(a) for each of the plurality of records in the database, selectively updating a user feedback parameter associated therewith in response to user interaction with the record; and

(b) ordering the identifications of the subset of records in the result set using the user feedback parameter associated with each record in the result set.

59. (ADDED) The method of claim 58, wherein the result set identifier for each search request record further includes a copy of the user feedback parameter for each of the subset of records identified thereby, and wherein selectively updating the user feedback parameter includes updating each copy of the user feedback parameter in the search request data structure.

60. (ADDED) The method of claim 59, wherein the result set identifier for each search request record further includes a list of record identifiers, each of which identifying a record in the associated subset of records, and each of which associated with the copy of the user feedback parameter for the associated record, the method further comprising ordering the list of record identifiers identified by the result set identifier of a first search request record based upon the copies of the user feedback parameters associated with the subset of records.

61. (ADDED) The method of claim 60, wherein the search request data structure comprises a table, wherein each search request record comprises an entry in the table, and

3       wherein the result set identifier for each search request record comprises a linked list of record  
4       identifiers.

1           62. (ADDED) The method of claim 61, further comprising sorting the table entries  
2       responsive to frequency of access thereto.

1           63. (ADDED) The method of claim 62, further comprising:

- 2               (a) adding a new entry to the table in response to receiving a search request not  
3       matching any existing entry in the table; and  
4               (b) removing an entry from the table in response to a frequency of access therefor  
5       falling below a predetermined threshold.

1           64. (ADDED) An apparatus, comprising:

2               (a) a memory within which is resident a search request data structure, the search  
3       request data structure including a plurality of search request records, each search request  
4       record including a search request identifier identifying a unique combination of  
5       keywords, and a result set identifier identifying a subset of a plurality of records in a  
6       database that match the unique combination of keywords;

7               (a) a program, resident in the memory, the program configured to, in response to  
8       a search request that specifies a plurality of keywords, search the search request data  
9       structure to locate a search request record including a search request identifier that  
10      matches the plurality of keywords in the search request, and to generate a result set  
11      identifying the subset of records identified in the result set identifier in the located search  
12      request record.

1           65. (ADDED) A program product, comprising:

2               (a) a memory within which is resident a search request data structure, ;  
3               (a) a program configured to, in response to a search request that specifies a  
4       plurality of keywords, search a search request data structure to locate a search request

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5 record including a search request identifier that matches the plurality of keywords in the  
6 search request, the search request data structure including a plurality of search request  
7 records, each search request record including a search request identifier identifying a  
8 unique combination of keywords, and a result set identifier identifying a subset of a  
9 plurality of records in a database that match the unique combination of keywords, and the  
10 program further configured to generate a result set identifying the subset of records  
11 identified in the result set identifier in the located search request record.

1       66. (ADDED) The program product of claim 65, wherein the signal bearing medium  
2 includes at least one of a recordable medium and a transmission type medium.